



August 16, 2017
Project No. 2015.0171

Mr. Jim Bennett, CHG
County of San Diego
Planning and Development Services
5510 Overland Avenue
San Diego, CA 92123

MONTHLY GROUNDWATER MONITORING REPORT – JULY 2017
TULE WIND CONSTRUCTION PROJECT
EAST SAN DIEGO COUNTY, CALIFORNIA

On behalf of Avangrid Renewables, LLC (Avangrid), Geo-Logic Associates (GLA) is pleased to provide this letter presenting July 2017 daily water level data and weekly flowmeter readings from project construction-related wells (production wells 6, 6a, and 8, and piezometer PZ-1) on Rough Acres Ranch. In accordance with the requirements established in the County of San Diego Planning and Development Services in the Major Use Permit 3300 09-019, weekly groundwater production data must be recorded from wells 6, 6a and 8, and daily water level data measured in the piezometer (PZ-1) and in wells 6 and 8. This report presents a summary of the collected data obtained in July 2017.

Following initial training by GLA on water level and flowmeter protocols for the Tule Wind construction project, daily water levels and weekly flowmeter readings are being obtained by Carol Brady with LG Equipment. Additionally, wells 6, 8, 8a and PZ-1 are each equipped with a pressure transducer to measure and record water level data, which can be uploaded to corroborate the manual measurements throughout the construction program. Well 6a is a non-community public water supply well, supplying water to Rough Acres Ranch, and a pressure transducer cannot be inserted into this well; collection of water levels in this well is not required.

Weekly Flow Meter Readings. Flowmeter readings at each well are recorded on field forms, provided in Attachment 1. Based on the flow meter readings obtained during the July 2017 period, the following water volumes were pumped, and stored or applied:

July 2017 Water Production Totals

Well	Gallons Pumped	Acre-Feet Pumped
Well 6	37,200	0.11
Well 6a	44,600	0.14
Well 8	0	0
Project Monthly Total		0.25

Note: Total volumes include water pumped to storage (lake or tanks)

Since the start of the project in December 2016, the total volume of water pumped is 51.31 acre-feet; approximately 12.76 acre-feet from Well 8 and the balance (38.55 acre-feet) from wells 6 and 6a (Attachment A – Groundwater Production Summary).

Daily Water Level Data. During the July 2017 period, water levels were measured manually in pumping Wells 6, 8, and piezometer PZ-1 each construction day and recorded on field forms (Attachment A). During prior months when Well 8 was pumped the water level drops below the pressure transducer in Well 8, obstructing access, a water level could not be measured below the pressure transducer. In lieu of measurements from Well 8, Ms. Brady has measured water levels in Well 8a located 286 feet east of Well 8. Table 1 presents a summary of the manual measurements obtained during the month.

Following submittal of the June report (dated July 17, 2017), it was noted that the water levels were erroneously reported at Well 8 during the period from June 19 to 30. Because the field sheets had been water-damaged, and the water level data were illegible over this period, the water levels table was revised using the visible data, supplemented by pressure transducer data recorded in Well 8 (Table 1). The pressure transducer data collected during the June period are also provided on the attached time-series chart, which shows a steady increase in the water level through the month and confirms that no pumping occurred after June 21 (Attachment B).

Based on the production and water level data presented, the project remains within its required groundwater parameters. Beginning in June, the project began ramping down its draw from the wells and is no longer pumping groundwater from Well 8. As the project approaches its allowable cap on groundwater production from the on-site wells, the majority of the water being used on site is being imported from offsite sources to the on-site tanks near wells 6 and 8 and other locations in the Project area.

CLOSING

This monthly report pertains to the Avangrid Tule Wind Project. It may not be appropriate for other projects or for other sites. If you have any questions, please contact me.

Sincerely,
Geo-Logic Associates



Sarah J. Battelle, CHG 609
Principal Geologist

Attachments:

Table 1 – Manual Water Level Measurements

Attachment A - Weekly Groundwater Production Record

Attachment B – Well 8 Groundwater Level Chart

Table 1
Manual Water Level Measurements
Tule Wind Project Monitoring Wells

Well Information	Well			
	6*	PZ-1	8*	8a
Depth below TOC:				
11/18/2016	30.68	31.30	242.90	30.70
12/6/2016	106.50	30.00	156.10	30.00
12/7/2016	105.10	31.90	212.35	31.90
12/8/2016	117.10	31.20	>240	31.20
12/9/2016	123.80	33.90	>240	33.90
12/12/2016	122.30	32.20	>240	35.30
12/13/2016	125.80	32.30	>240	35.70
12/14/2016	129.40	32.40	>240	37.80
12/15/2016	128.90	32.30	>240	38.00
12/16/2016	120.30	NA	>240	NA
12/19/2016	48.50	32.30	>240	36.00
12/20/2016	NA	32.30	>240	37.30
1/4/2017	37.60	32.45	>240	31.50
1/5/2017	71.60	32.50	>240	36.00
1/6/2017	78.60	32.35	>240	35.90
1/7/2017	103.80	32.50	>240	36.50
1/9/2017	77.80	32.40	>240	34.60
1/10/2017	74.70	32.40	>240	33.30
1/11/2017	99.40	32.40	>240	33.10
1/12/2017	66.20	32.45	>240	35.10
1/16/2017	33.10	32.30	44.70	32.40
1/17/2017	118.70	32.40	>240	34.50
1/18/2017	33.80	32.40	>240	36.60
1/30/2017	38.20	31.70	25.70	32.70
1/31/2017	88.00	31.70	>240	35.80
2/1/2017	35.80	31.60	>240	35.80
2/3/2017	93.90	31.60	>240	35.70
2/6/2017	34.20	31.40	>240	34.20
2/7/2017	36.40	31.30	>240	35.70
2/8/2017	36.80	31.30	42.50	36.50
2/9/2017	37.60	31.30	>240	36.70
2/10/2017	32.30	31.30	>240	37.00
2/11/2017	34.40	31.30	>240	36.20
2/13/2017	36.20	31.30	75.80	36.70
2/14/2017	36.70	31.30	>240	37.20
2/15/2017	111.50	31.30	>240	37.20
2/16/2017	36.10	31.30	>240	38.40
2/17/2017	37.10	31.30	>240	38.50
2/20/2017	96.10	31.30	>240	38.50
2/21/2017	96.10	31.30	>240	40.10
2/22/2017	94.10	31.30	>240	40.90
2/23/2017	96.10	31.30	>240	40.90
2/24/2017	44.60	31.30	>240	41.10
2/25/2017	36.10	31.30	>240	41.70
2/27/2017	36.40	31.30	>240	42.90
2/28/2017	37.10	31.30	>240	43.30

Table 1
Manual Water Level Measurements
Tule Wind Project Monitoring Wells

Well Information	Well			
	6*	PZ-1	8*	8a
Depth below TOC:				
3/1/2017	34.10	31.40	>240	43.50
3/2/2017	34.60	31.60	>240	43.70
3/3/2017	33.10	31.50	>240	44.00
3/4/2017	39.40	31.45	>240	44.50
3/6/2017	38.50	31.50	>240	39.00
3/7/2017	34.60	31.40	>240	39.40
3/8/2017	34.90	31.40	>240	42.90
3/9/2017	35.50	31.50	>240	43.00
3/10/2017	43.80	31.50	>240	44.30
3/11/2017	38.70	31.50	>240	44.50
3/13/2017	40.10	31.50	>240	44.80
3/14/2017	39.70	31.50	>240	44.80
3/15/2017	44.00	31.60	>240	44.90
3/16/2017	33.70	31.60	>240	45.00
3/17/2017	48.20	31.60	>240	45.20
3/20/2017	44.00	31.70	>240	45.90
3/21/2017	53.10	31.70	>240	45.00
3/22/2017	46.60	31.85	>240	45.20
3/23/2017	44.00	31.90	>240	45.30
3/24/2017	36.90	31.90	>240	45.40
3/27/2017	33.80	31.90	>240	45.00
3/28/2017	36.20	32.00	>240	44.50
3/29/2017	46.20	32.00	>240	44.80
3/30/2017	44.10	32.35	>240	45.00
3/31/2017	36.80	32.40	>240	46.10
4/3/2017	36.80	32.45	55.90	46.00
4/4/2017	33.20	32.40	>240	46.50
4/5/2017	55.60	32.50	>240	45.90
4/6/2017	45.40	32.60	>240	45.40
4/7/2017	50.50	32.70	95.50	44.65
4/10/2017	37.46	32.30	64.10	42.75
4/11/2017	41.50	32.55	>240	42.00
4/12/2017	39.00	32.62	70.30	45.10
4/18/2017	32.90	32.25	43.10	40.60
4/19/2017	33.85	32.25	>240	46.10
4/20/2017	40.90	32.45	>240	48.10
4/21/2017	41.20	32.50	>240	48.40
4/22/2017	41.80	32.60	>240	48.50
4/24/2017	36.50	32.60	>240	48.70
4/25/2017	40.70	32.60	>240	49.20
4/26/2017	40.00	32.50	>240	49.60
4/27/2017	36.00	32.60	>240	49.90
4/28/2017	42.30	32.64	>240	50.30

Table 1
Manual Water Level Measurements
Tule Wind Project Monitoring Wells

Well Information	Well			
	6*	PZ-1	8*	8a
Depth below TOC:				
5/1/2017	40.20	32.70	>240	44.50
5/2/2017	46.70	32.75	>240	46.60
5/3/2017	48.80	32.75	>240	48.90
5/4/2017	45.30	32.83	>240	50.30
5/5/2017	48.90	32.80	>240	51.00
5/8/2017	45.60	32.80	>240	44.70
5/9/2017	44.70	32.86	>240	43.00
5/10/2017	43.90	32.80	40.35	42.90
5/11/2017	40.50	32.80	56.30	44.45
5/12/2017	39.80	32.80	43.30	43.00
5/15/2017	33.70	32.70	36.20	40.90
5/16/2017	33.95	32.75	>240	45.60
5/17/2017	39.60	32.75	>240	46.90
5/18/2017	41.20	32.90	>240	47.00
5/19/2017	37.60	32.80	>240	47.70
5/22/2017	45.30	32.78	47.00	43.55
5/23/2017	46.90	32.90	>240	46.27
5/24/2017	40.43	32.90	>240	48.80
5/25/2017	46.70	32.90	>240	47.00
5/31/2017	42.90	32.70	>240	43.20
6/1/2017	38.70	32.70	>240	47.00
6/2/2017	40.10	32.72	>240	47.20
6/5/2017	44.70	32.70	>240	44.00
6/6/2017	48.20	32.60	>240	44.40
6/7/2017	44.10	32.60	>240	49.20
6/8/2017	40.70	32.60	>240	49.30
6/9/2017	38.60	32.50	>240	49.80
6/12/2017	36.90	32.50	>240	50.30
6/13/2017	36.80	32.50	50.00	45.70
6/14/2017	35.70	32.40	45.70	44.30
6/15/2017	35.60	32.40	40.90	43.30
6/16/2017	33.35	32.45	35.10	42.10
6/19/2017	33.00	32.40	33.70	41.90
6/20/2017	36.80	32.40	33.30	41.00
6/21/2017	38.90	32.40	>240	42.60
6/22/2017	36.70	32.40	42.80	44.20
6/23/2017	33.90	32.20	36.30	41.10
6/26/2017	35.60	32.20	31.90	41.70
6/27/2017	33.00	32.20	31.30	42.30
6/28/2017	33.10	32.20	30.90	39.80
6/29/2017	36.40	32.20	28.80	39.80
6/30/2017	33.40	32.20	29.00	39.70
7/10/2017	33.70	32.18	29.00	37.40
7/11/2017	35.30	32.20	28.90	38.00
7/12/2017	36.10	32.20	28.70	38.00
7/13/2017	36.70	32.20	29.00	37.80
7/14/2017	38.90	32.20	28.90	35.90
7/17/2017	48.10	32.20	30.10	37.80
7/18/2017	35.30	32.18	29.60	38.10
7/19/2017	33.05	32.18	27.70	38.10
7/20/2017	34.30	32.00	26.90	37.90

Table 1
Manual Water Level Measurements
Tule Wind Project Monitoring Wells

Well Information	Well			
	6*	PZ-1	8*	8a
Depth below TOC:				
7/21/2017	34.70	32.20	26.80	37.10
7/24/2017	36.30	32.19	26.90	37.10
7/25/2017	34.40	32.20	30.20	36.80
7/26/2017	35.70	32.15	28.00	36.50
7/27/2017	38.10	32.10	26.70	35.00
7/31/2017	36.60	32.10	26.70	35.00

*Production well - Water level measurements are not static levels.

NA - Water level could not be measured.

ATTACHMENT A

Weekly Groundwater Production Record

GROUNDWATER PRODUCTION SUMMARY							
	Piezometer PZ-1						
Date	Depth to Water						
11/18/2016	31.30		Production Summary		Total Acre Foot		
12/20/2016	32.30		WELL 6/6A	12,562,465	38.552738		
1/31/2017	31.60		WELL 8	4,157,055	12.757516		
2/28/2017	31.30						
3/31/2017	32.40		TOTAL	16,719,520	51.31025444		
4/28/2017							
Well Location:	WELL 6						
Date	Meter Reading	Date	Meter Reading	Total Gallons	Depth to Water	Comments	
11/18/2016	664,935	12/20/2016	1,987,900	1,322,965	30.68	This Well feeds the Lake and the 3 towers at well 6	
12/20/2016	1,987,900	1/31/2017	2,519,800	531,900	35.8		
1/31/2017	2,519,800	2/28/2017	3,093,900	574,100	129.2		
2/28/2017	3,093,900	3/31/2017	4,716,300	1,622,400	36.8	The Lake currently holds 1 million gallons of water for use at a later date	
3/31/2017	4,716,300	4/30/2017	5,491,500	775,200			
4/30/2017	5,491,500	5/31/2017	6,221,800	730,300			
5/31/2017	6,221,800	6/30/2017	6,248,300	26,500			
6/30/2017	6,248,300	7/15/2017	6,261,800	13,500			
7/15/2017	6,261,800	7/22/2017	6,282,400	20,600			
7/22/2017	6,282,400	7/31/2017	6,285,500	3,100			
TOTAL				5,620,565			

Well Location:	WELL 6A	supplies the pond					
Date	Meter Reading	Date		Meter Reading	Total Gallons	Depth to Water	Comments
12/20/2016	31,284,500	3/25/2017		32,186,100	901,600		This meter is located at the
3/25/2017	32,186,100	3/31/2017		32,737,200	551,100		one tower labeled Rough Acres
3/31/2017	32,737,200	4/30/2017		33,956,700	1,219,500		
4/30/2017	33,956,700	5/31/2017		35,366,600	1,409,900		
5/31/2017	35,366,600	6/30/2017		35,437,400	70,800		
6/30/2017	35,437,400	7/15/2017		35,455,800	18,400		
7/15/2017	35,455,800	7/22/2017		35,477,300	21,500		
7/22/2017	35,477,300	7/31/2017		35,482,000	4,700		
TOTAL					4,197,500		
Well Location:	WELL 6A	production Portion					
Date	Meter Reading	Date		Meter Reading	Total Gallons	Depth to Water	Comments
12/5/2016	4,335,200	12/20/2016		4,802,700	467,500		This meter is located at the
12/20/2016	4,802,700	1/31/2017		5,163,400	360,700		one tower labeled Rough Acres
1/31/2017	5,163,400	2/28/2017		5,734,800	571,400		
2/28/2017	5,734,800	3/31/2017		6,418,200	683,400		
3/31/2017	6,418,200	4/30/2017		6,702,800	284,600		
4/30/2017	6,702,800	5/31/2017		7,057,700	354,900		
5/31/2017	7,057,700	6/30/2017		7,079,600	21,900		
6/30/2017	7,079,600	7/31/2017		7,079,600	-		
					-		
TOTAL					2,744,400		
Well Location:	WELL 8	Cubic Feet					

Date	Meter Reading	Date		Meter Reading	Total Gallons	Depth to Water	Comments
11/18/2016	1,054	12/20/2016		52,650	385,938	242.9	This Well feeds the 3 towers
12/20/2016	52,650	1/31/2017		110,360	431,671		at well 8
1/31/2017	110,360	2/28/2017		207,530	726,832		
2/28/2017	207,530	3/31/2017		372,449	1,233,594		This well has a blockage at 240ft
3/31/2017	372,449	4/30/2017		465,528	696,231		
4/30/2017	465,528	5/31/2017		532,770	502,970		
5/31/2017	532,770	6/30/2017		556,810	179,819		
6/30/2017	556,810	7/15/2017		556,810	-		
7/15/2017	556,810	7/31/2017		556,810	-		
TOTAL					4,157,055		

ATTACHMENT B

Well 8 Groundwater Levels Chart

Long-Term Groundwater Level Monitoring - Rough Acres Ranch

